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and finish more completely, with the sole use of the hammer, but that the French make great use of files and other finishing tools."

V.—Brass, Copper, Lead, and Zinc.

The process of hammer-raising, of which mention has been made in our remarks on iron, is effected by a series of blows dealt regularly and evenly so as to keep the shape regular and all parts of equal thickness, care being taken to have the blank sheet of metal of exact size, so that none has to be cut off afterwards. The copper moulds used for jellies, cakes, etc., afford a good example of high relief by hand hammering.

Copper and Latten (yellow brass) are often worked and raised by means of the planisher or by "spinning," *i.e.* moulded with copper burnishers while being turned in the lathe. This method is used alike by tinkers and brass artificers in the production of tin or copper vessels, metal plates, etc., and although it does not strictly belong to art execution, it is frequently associated with it; for here, as with more delicate work, after the vessel is finished the rim, the fluting, and the like are added and touched up by the repairer. When all the corrections are made and the required effect produced, the surface is finished by chiselling or carving of the finer parts, such as flowers, foliage, and all the details requiring skillful execution The work is completed by *matting* certain portions of the surface, some being left bright and others flat, or retiring, in order to produce texture or variety.

If the vessel is somewhat complicated, exhibiting handles, rings, stems, knobs, etc., such portions have to be raised separately and joined in their place by riveting or brazing.*

The difference between cast and wrought metal consists in this: that the former is generally thick, admitting of rich and elaborate ornamentation; while the thinness of the latter will only bear broad and simple designs, with retreating outlines, so as to avoid sharp and acute edges, well seen in Figs. 195 and 195A, where the treatment is appropriate to the material employed and pleasing in its effect.

The use of copper was known to the early inhabitants of the countries in which the metal is found, and was fashioned into weapons, domestic utensils, etc. From the East have come those shapely coffee pots and ewers, nearly of pure copper, which are the delight of connoisseurs, Fig. 196.

The greater portion of the admirably wrought vessels for church use of the thirteenth, fourteenth and fifteenth centuries were of copper gilded with gold, as were those of the Renaissance, many of which are of great beauty of form and ornamentation; nor can it be said that the use of copper ever ceased. Its malleability is peculiarly adapted to the formation of objects of every variety and shape. Its use is seen in our boilers and refrigerating pans, in the sheets that protect the keel of our ships from barnacles and other insidious creatures, as well as in the production of smaller objects, such as stew and warming pans, tea urns, kettles, coinage, medals, etc.

Tin, or white lead, was known in remote times, and still retains its value in the industrial arts when combined with lead and copper. Lead, on account of its extreme ductility, has to be supported by iron or wooden braces; hence, redundant forms should be rejected in order to prevent awkward deformations.

Lead was extensively used during the Middle Ages, the Renaissance, Fig. 197, and even in our own day, in false roofs, finials, and the like. The fountains of Versailles are of lead partly fused and partly wrought, dating from the seventeenth and eighteenth centuries.

Electro and stamped work have dealt a severe blow to artistic metal productions. Many copies of beautiful designs are undoubtedly reproduced at a very moderate cost, and where a plain form only is required stamping is satisfactory enough; but when decorative ornament is introduced the mechanical appliances become apparent, for little or no variety of shape is to be looked for in the designs.

Skilful artisans, too, are becoming every day more scarce, and in a period of hurry, when everything is for mere show, the time cannot be far distant when the fine art of wrought metal will only be remembered as a tradition of the past, or at least for the appreciative few.

Zinc, being the least valuable of all metals, is not usually beaten or wrought, and, as it is rather brittle, it use should be restricted to objects of large dimensions. But its extreme malleability will also prevent its being extensively adopted in architectonic work.

Imitation Paris bronze (cast and wrought zinc) is treated almost in the same manner as the nobler metal; but, however well moulded or cast, it does not admit of the same finish as bronze, and it is foolish to imagine that zinc statuettes, zinc flower pots, zinc stands, and the like, can be decorated, treated with color, or gilded and given the patinas of bronze in a satisfactory manner.

The piercing press does excellent service in the reproduction of a set design, but it is inapplicable to original art work. For these recourse must be had to the fret and the ribbon saw, which combine the qualities of machine and hand work to such a marvellous degree, that in another age the effect produced would have been attributed to a supernatural power.

The construction of a design pierced by mechanical means should not be the same on a dark as on a light ground, and when the scheme of the design alters the place of the joints, these must be made sufficiently strong to prevent the breaking or twisting of the blank piece, Fig. 198. In principle, curvilinear forms are better adapted to piercing with the fret saw than straight lines, consequently tangent crossings and acute edges should be discarded. The fret saw soon breaks or gets out of order; hence its application is expensive and confined to very thin sheets of iron, or to more ductile metals, such as bronze and zinc, which admit of elaborate designs.

Work done by means of these appliances is in every way more satisfactory than the *cast brass fittings* that were in vogue some years ago, the chief characteristic of which was inferior and wearisome uniformity of design, whereas the plain and pierced surfaces of this style form a pleasing contrast with the surrounding reliefs.

(TO BE CONTINUED.)

RECENT NOVEL INTERIORS.

SOME recent specimens of interior decoration in this city call for more than passing comment, representing as they do three different forms of public buildings—the hotel, place of business and the theatre. Though all were done by the Linspar Decorating Company, and though the material employed in all is very largely the same, each is marked by an individuality of style not only as regards design but in color and adaptability to the use intended.

Elsewhere we give sketches of the ceiling and frieze which form a large part of the decorations of Hudnut's new drug store on Broadway, near 20th street. In this, as in the others, the design was made by the artists of the company, and the fresco, linspar work, bronzing and coloring was done by the men in its employ. The field of the ceiling is frescoed in light blue, the ornaments being applied in linspar and bronzed in gold and silver and touched up in colors; the side walls are of a light terra cotta. As good taste would dictate for the decoration of a place devoted to trade, there is nowhere any sign of overloading with ornament, and the whole effect is very rich and tasteful. The lines are graceful, and yet the entire work presents an effect of solidity and permanency, which is admirably adapted to the place and its purposes.

A more ambitious scheme of decoration is to be seen in the new dining-room of the Albemarle Hotel, on Broodway and 21st street. Here the ceiling is in the shape of a long oval with circles at each end. The ground work is frescoed in imitation of tapestry effects, the main pattern consisting of Renaissance scroll work. Except the tapestry painting the entire work is in Linspar in relief. The room gives an opportunity for a rich display of color in ceiling, frieze, field and dado which have been admirably handled, and the result is one of the handsomest apartments of the kind in the country.

The New Opera House in 125th street, now in course of completion, will, when finished, add largely to the reputation of the Linspar Company, and will doubtless give theatrical managers some novel ideas in the interior decoration of their houses. The ceiling is beautifully frescoed, the design embodying female figures, flowers and fruits. All the relief work both here and on the side walls are in Linspar. The hangings of the boxes and proscenium are in a rich crimson, and the whole interior presents a deliciously warm and home-like aspect. One marked fact connected with all three of these decorative schemes is that no other company could have done all the work, no one else having the facilities or controlling the material employed. We have heretofore spoken of the many advantages possessed by Linspar, and our readers, by visiting the places described, can hardly fail to appreciate its wonderful adaptability to various decorative uses.

At the office of the Company, in the building 45 Broadway, can be seen innumerable specimens of Linspar in all its varieties of treatment together with proofs of the skill of the Company's designers. Every style of fresco and other decorative painting is done by the Company, and the work in connection with Linspar is admirably adapted to the decoration of private houses of every class. Specimen rooms decorated and furnished for residences can now be seen at Sheppard Knapp & Co.'s, 6th avenue, 13th and 14th streets, New York.

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* Sometimes a wood or resin core is used for raising the metal.